Northeast Regional Association of Coastal Ocean Observing Systems

Progress Report
University of Southern Maine
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For the Period July 1, 2007 to December 31, 2007

Project Summary

The goal of this project is to establish the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) in a manner consistent with all certification requirements of the U.S. IOOS.

Objectives leading to this goal include:

1. Respond to and, in the governance of the Regional Association (RA), provide a voice to users;
2. Secure the participation of the producers and providers of data and data products through the existing distributed regional system of ocean observing and predictions;
3. Develop synergies between the national backbone of the RCOOS and the regional enhancements, with strong connections to the Mid-Atlantic region;
4. Assure that the "conveyor belt" is in place, by which research in ocean observing technologies and modeling feed ocean observing operations, and operations, in turn, inform the need for research; and
5. Build on recent breakthroughs in dynamic data sharing, both technically and institutionally, and involving oceanographic, biologic, and geologic providers, to create an effective, standards-based data management and communications subsystem.

The approach to establishing a Northeastern Regional Association involves the following eight steps over 36 months:

1. Organize and convene an Advisory Committee of data users and producers;
2. Achieve a heightened understanding of users' needs;
3. Quantify the most important gaps in the system to be filled to meet these needs;
4. Establish the principles by which the ocean data generators, modelers, and users will transform the collection of existing observing system into a network of systems (the "regional coastal ocean observing system" or RCOOS) envisioned for an IOOS;
5. Through the nascent Gulf of Maine Ocean Data Partnership, advance the integration of ocean observation data to the point of reliable implementation, and the Partnership itself to a level of institutional stability;
6. Design the governance and legal structure of a Regional Association that meets the standards of the IOOS, according to the principles established under (4);
7. Prepare a business plan for the Regional Association and RCOOS; and
8. Launch and begin the operations of the Regional Association in 2007.

Stakeholder Engagement and Communications

Since the last progress report two meetings of the Advisory Committee have been held in August and November of 2007. The meetings have been held in New Hampshire and Massachusetts. Additionally, the Executive Committee met in person following each of the Advisory Committee sessions, and several times by phone. Listed below are the dates of all the meetings and their purpose.

July 12 NERACOOS Executive Committee Meeting
- Discuss evolution of governance models, comparing two models for governance that have evolved
- Develop goals for the proposal due August 22 to NOAA for support of the regional association

July 24 NERACOOS Executive Committee Conference Call
- Work on development of the NOAA RA Planning Grant Proposal

August 1 NERA Advisory Committee Meeting
- Report on product development progress to date
- Report on RCOOS and RA proposals to NOAA
- Discuss governance of the regional association

August 8 NERACOOS Executive Committee Conference Call
- Work on development of the NOAA RA Planning Grant Proposal

August 14 NERACOOS Executive Committee Conference Call
- Work on development of the NOAA RA Planning Grant Proposal

August 20 NERACOOS Executive Committee Conference Call
- Work on development of the NOAA RA Planning Grant Proposal

August 29 NERACOOS Executive Committee Conference Call
- Discuss and plan for Zdenka Willis' visit to the region

September 28 NERACOOS Executive Committee Conference Call
- Advance development of NERACOOS by-laws
- Review the RCOOS Letter of Intent
- Discuss the region's representation to NFRA
- Discuss content for the poster for the ERF conference

October 26 NERACOOS Executive Committee Conference Call
- Discuss RA guidance from the federal level
- Affirm timeline for incorporation
- Discuss governance

November 12 Executive Committee Meeting

- Review development of NERACOOS governance
- Review governance models of other RAs
- Finalize a recommendation to the advisory committee regarding governance

November 29 NERACOOS Advisory Committee Meeting

- Review progress on federal funding and RA proposals to NOAA
- Review the Ocean Data Partnership progress and work plan
- Discuss NERACOOS governance
- Discuss the NERACOOS RA year 3 work plan
- Review next steps

The NERACOOS web site, www.neracoos.org has been constantly updated with new membership information and meeting details, including notes, presentations, agendas, user needs analyses, and so on.

Philip Bogden with GoMOOS and Al Hanson with the University of Rhode Island were selected to be the NFRA representatives, representing the Gulf of Maine and Southern New England areas respectively. Both participated at the IOOS Regional Coordination Meeting in St Petersburg October 23-25, along with Ru Morrison with the University of New Hampshire and John Trowbridge with Woods Hole Oceanographic Institute. At this meeting, NFRA promised to deliver high-level conceptual designs to NOAA by December 20. To that end, the NERACOOS Executive Committee collaboratively developed the Conceptual Design document, which detailed the region's priorities, goals and objectives, description of ocean observing assets, and estimated costs for RCOOS implementation.

Jen Levin, Riley Young Morse, and Tom Shyka attended the National Estuarine Reserve Federation annual meeting in Rhode Island in early November to conduct outreach on behalf of NERACOOS. Shyka presented a session on engaging end users in the product development process and participated on a panel discussing how to make monitoring and observing systems applicable. Staff also developed and manned the NERACOOS poster on display in the IOOS room, fielding questions about the RA's development and overall purpose.

Planning and Implementation – Governance

Much of the work of the Advisory and Executive Committees over the past six months has focused on developing a governing system for the new RA. Based on all input received, a governing board has been detailed that is representative of all states and provinces in the Northeast, and of academic, state government, and industry and users.

The details of this governing structure have been articulated on paper and, as of December 31, 2007, a complete set of bylaws was under final review by the Executive Committee. The organizational structure calls for a Board of Directors of up to 25

persons (7 representing state and provincial governments, to be initially named by the Northeast Regional Ocean Council, an entity formed by the New England Governors and Eastern Canadian Premiers; 7 representing users and industry, to be initially named by the New England Sea Grant directors; 7 representing academic institutions, to be initially named by the Academic Consortium, a group named for this purpose; and up to 4 additional persons, as the Board may deem appropriate, representing strategic skills and constituencies). Below the Board of Directors will be a Product Requirements Team, a Science Requirements Team, and a Stakeholders' Council.

Defining the Regional Observing System Priorities

Priorities and prototype products: Earlier work with the Advisory Committee led to four broad priority areas for the development of prototype products: water quality, inundation, living marine resources, and harmful algal blooms. Based on user surveys, NERACOOS has added a fifth initial focus area, marine operations, given the importance of ocean-related data to mariners.

The identified priorities were central to NERACOOS's proposed follow-up Regional Association grant request and to its recent RCOOS proposals.

Product prototyping, as more fully described in our June 30, 2007, progress report, has continued and has helped set the foundation for a proposed Interoperability Experiment described under Gulf of Maine Ocean Data Partnership below.

Gulf of Maine Ocean Data Partnership: Through the RA planning grant, GoMOOS continues to support the work of the Gulf of Maine Ocean Data Partnership (GoMODP), staffing their meetings and communications, and preparing for the web services workshop in the spring of 2008. The GoMODP added a new member, the Northeast Consortium.

The Ocean Data Partnership continues its work on ocean data authority, discoverability, accessibility, and interoperability and has made excellent organizational progress in the past six months.

The EPA's National Environmental Information Exchange Network (NEIEN) program awarded the New Hampshire Department of Environmental Services over $450,000 to further data interoperability among the GoMODP. The Gulf of Maine Ocean Observing System (GoMOOS) will be the technical lead on the grant and several GoMODP organizations are participating, including the Coastal Ocean Observing Center at the University of New Hampshire, Tuft's University Seabird Ecological Assessment Network, NOAA's Northeast Fisheries Science Center, NOAA's National Estuary Research Reserve System, the Gulf of Maine Council on the Marine Environment, the USEPA Atlantic Ecology Division, and the Center of Marine Biodiversity. This grant will allow the Partnership to implement and test the EPA's NEIEN technologies for sharing regional environmental data. Additionally, this effort will allow regional partners to assess how the NEIEN could support the developing IOOS Data Management and

Communications efforts.

The Partnership has held several conference calls to discuss the future relationship of the ODP to the overall NERACOOS. Bob Groman and Paul Currier serve as the ODP representatives to the NERACOOS Advisory Committee. The ODP sent the NERACOOS EC a letter requesting that it be actively engaged in the development of any data management plan the RA decides to develop.

The ODP developed a plan for an Interoperability Experiment, which will define the functional and technical requirements for end-user driven products, then engage partners in realizing the technical capacity necessary to develop the products. Ultimately, the experiment will result in fully functioning products for end users that require interoperability of data from multiple sources. This effort will involve OBIS, OGC, and Exchange Network standards. We believe this Interoperability Experiment will become a cornerstone of our understanding of how to bring together diverse oceans data bases – biological, physical, and water quality – to create products for resource managers and others that cross all of these domains. It will be a major focus of work in 2008.

ODP volunteers compiled information on partners' data expertise, which is now available on the ODP's web site through an interactive web page. Partners are able to query for a particular area of expertise (such as Oracle, OBIS, etc.) to acquire a list of partners' staff with that expertise and who are willing to assist with interoperability related questions and issues. Also, partners can edit their expertise information.

Another subcommittee of the ODP reviewed partners' data links as listed in the GCMD (Global Change Master Directory) metadata entries and through previous partner surveys. The results have been compiled and a findings report is available on the GoMODP website.

In December, the ODP hosted its annual meeting in Rye, New Hampshire. Some highlights from the meeting follow:

- Andy Sherin with COIN Atlantic and Captain Christopher Moore with the NOAA IOOS Office participated as guest speakers.
- The Partnership decided to maintain its present geographic focus on the Gulf of Maine.
- The Partnership will ask the Regional Association Executive Committee to formally include the ODP as an independent entity for advice on data management practice and integration to the Products Requirements Team in the regional association by-laws.
- The Partnership decided to ask GoMOOS to continue to be the host organization.
- The Partnership will create a subset of the Technical Committee, chaired by Rich Signell, focused on model discoverability, accessibility, and interoperability.
- The Partnership voted in a new Executive Committee.

Major Goals for Year 3

Goal 1: Support the Advisory Committee and Executive Committee

Goal 2: Complete the governing structure for NERACOOS
Goal 3: Establish a Board of Directors for NERACOOS
Goal 4: Complete a business plan for NERACOOS
Goal 5: Engage the NERACOOS board in dedicated strategic planning to outline the decision-making process and staffing strategy for the new association.

Support the Advisory Committee and Executive Committee
The Advisory Committee has met for the last time, as the Regional Association is close to incorporation. Although this committee is no longer in place, the same institutions and many of the same individuals will be actively engaged through the association through the teams and stakeholder council structure.

The Executive Committee's work is nearly done, as it works to engage a new board of directors in the early part of 2008. Staff will continue to support the Executive Committee, and then the board of directors in the formation and early stages of the organization.

Complete the Governing Structure for NERACOOS
The governing structure for NERACOOS has been developed. The next stages are implementing it through incorporation and convening the board of directors to begin the work of the regional association.

Establish a Board of Directors for NERACOOS
In the first quarter of 2008, the Executive Committee will be asking the Academic Consortium, New England Sea Grant programs, and the Northeast Regional Ocean Council to appoint members to the NERACOOS board. The board will consist of:

- Seven representatives of academic institutions
- Seven representatives of state and provincial governments
- Seven representatives of user and industry groups
- Up to four additional persons base on strategic skills or constituencies

Once each of the three appointing bodies has named at least four members to the initial board of directors, the Executive Committee will pass its decision-making authority over to this body. This founding Board will be responsible for many of the early stage decision-making required of a Regional Association of Coastal Ocean Observing Systems.

Complete a Business Plan for NERACOOS
During the last year, a business plan has begun to take shape as we have considered the potential funding sources for different functions of the NERACOOS, including grants and contracts for DMAC functions, and leveraged external grants to match IOOS program funds for observing and modeling functions. We have continued to have discussions around sustainability of the systems that will comprise the Regional Association, geographic coverage, the model of a "distributed lab" that emphasizes integration of existing, ongoing data sets with sustained funding behind them, and

diversification of system revenues. These and other topics will be more formally addressed in the development of the business plan this coming year.

Engage the NERACOOS Board in Dedicated Strategic Planning
In the first part of 2008, the Executive Committee and staff will assist the new board in the work of incorporating the association, and in deciding the necessary staffing and decision-making strategies. The Advisory Committee has indicated its discomfort in making decisions about how the association will operate and how it will be staffed, preferring instead to defer those decisions to the governing board.

In addition to these goals, we continue to want to increase our understanding of the gap between major ocean observing and forecasting products sought by users and decision makers and the current capacity of the ocean observing and prediction system in the northeast. This understanding will help to determine the priorities for maintaining and adding to the existing capacity. It likely will emerge incrementally—in part during the course of year 3 as a result of completing prototype products and determining what is needed to sustain them; in part as a result of the work of RCOOS scientists under terms of the FY 2007 NOAA RCOOS grant (for example, these include Observing System Simulation Experiments); and in part as a result of development of a more complete Science Plan during the next RA planning phase.

Budget Analysis

Through December 2007, 70% of the three-year grant funds were expended or encumbered. To the degree that encumbered funds (particularly through USM's contract with GoMOOS) as well as unencumbered funds were under spent through December 2008, the largest reason is that the first-year grant became available five months later than the theoretical start date (September 2005 rather than April 2005). Thus, the work has been underway (through December 2008) only for 28 months rather than 33 months; staffing and other expenses have paralleled this time period.

That said, our analysis of the budget suggests that we will have the opportunity to re-budget approximately $100,000 of funds. This is primarily due to under spending in two line items: travel and facilitation consultant. Travel costs have been significantly less than originally projected; facilitation consultant costs (for facilitating Advisory Committee meetings) are less because the Maine Sea Grant Program volunteered this service and has been carrying out effectively.

For both of these reasons, during February 2008, we intend to seek a one-year extension of this RA grant and to use approximately $100,000 to continue support of the Ocean Data Partnership and specifically the Interoperability Experiment, which will advance the region's capacity for product development based on diverse sets of ocean observing and related data. This extension has been discussed with NOAA's Technical Program Officer for the Northeast, Betsy Nicholson.